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ABSTRACT

Using phase shifting on a mask can advantageously improve printed feature resolution on a wafer, thereby allowing greater feature density on an integrated circuit. Phase shifting can create an intensity imbalance between 0 degree and 180 degree phase shifters on the mask. An improved method of designing an alternating PSM to minimize this intensity imbalance is provided. Sub-resolution features, called "blockers", can be incorporated in the alternating PSM design. Specifically, blockers can be formed in the 0 degree phase shifters. In this configuration, the intensity associated with the 0 degree phase shifters approximates the intensity associated with the corresponding 180 degree phase shifters. Intensity balancing using blockers retains image contrast, thereby ensuring printed feature quality.